

Claims

- [c1] 1. An optical arrangement for selection and detection of the light of a spectral region of a light beam comprising: means for spectral dispersion of the light beam thereby defining a spectrally dispersed light beam, means for selecting a definable spectral region, and a detection apparatus, wherein the means for spectral dispersion of the light beam and the detection apparatus change their position relative to one another.
- [c2] 2. The arrangement as defined in Claim 1, wherein the change of the relative position between the spectrally dispersed light beam and the detection apparatus brings about a change in the initial and/or final wavelength of the spectrally selected region.
- [c3] 3. The arrangement as defined in Claim 1, wherein at least one optical component is arranged so that the path of the light beam and the relative position change between the spectrally dispersed light beam and the detection apparatus is accomplished by rotating and/or shifting one optical component.
- [c4] 4. The arrangement as defined in Claim 3, wherein the optical component is arranged before the means for spectral dispersion.
- [c5] 5. The arrangement as defined in Claim 1, wherein the relative position change between the spectrally dispersed light beam and the detection apparatus is accomplished by means of a relative motion of the detection apparatus.
- [c6] 6. The arrangement as defined in Claim 1, wherein the relative motion of the detection apparatus occurs along in a straight line along on a curve.
- [c7] 7. The arrangement as defined in Claim 1, wherein the means for spectral dispersion consists essentially of a prism, a reflection grating, and a transmission grating.
- [c8] 8. A confocal scanning microscope comprising: a laser light source generating

a light beam, which defines a illumination beam path, a specimen arranged with respect to a microscope optical system, which defines together with the light from the specimen a detection beam path, means for spectral dispersion of the light beam in the detection beam path, means for selecting a definable spectral region of the light beam, and a detection apparatus, wherein in order to influence the spectral region the spectrally dispersed light beam and the detection apparatus change their position relative to one another.

[c9] 9.The confocal scanning microscope as defined in Claim 8, wherein the detection apparatus comprises only one slinge detector.

[c10] 10.The confocal scanning microscope as defined in Claim 8, wherein at least one mirror is arranged in the detection beam path and the relative position change between the spectrally dispersed light beam and the detection apparatus is accomplished by rotating and/or shifting the mirror.

[c11] 11.The confocal scanning microscope as defined in Claim 10, wherein the mirror is arranged before the means for spectral dispersion.

[c12] 12.A confocal scanning microscope comprising a laser light source generating a light beam, which defines a illumination beam path, a detection beam path, means for spectral dispersion of the light beam in the detection beam path, means for selecting a definable spectral region of the light beam in the detection beam path, and a detection apparatus, wherein in order to influence the spectral region, the spectrally dispersed light beam and the detection apparatus change their position relative to one another.

[c13] 13.The confocal scanning microscope as defined in Claim 12, wherein the relative position change between the spectrally dispersed light beam and the detection apparatus brings about a change in the initial and/or final wavelength of the spectrally selected region.

[c14] 14.The confocal scanning microscope as defined in Claim 12, wherein at least one optical componeis nt arranged in the detection beam path

awherein nd the relative position change between the spectrally dispersed light beam and the detection apparatus is accomplished by rotating and/or shifting one singe optical component.

- [c15] 15.The confocal scanning microscope as defined in Claim 12, wherein the relative position change between the spectrally dispersed light beam and the detection apparatus is accomplished by rotating and/or shifting the means for spectral dispersion.
- [c16] 16.The confocal scanning microscope as defined in Claim 15, wherein a galvanometer is used to accomplished rotation of the means for spectral dispersion.
- [c17] 17.The confocal scanning microscope as defined in Claim 16, wherein a component to be rotated is coupled directly to the galvanometer and mounted on the galvanometer's mechanical rotation axis.
- [c18] 18.The confocal scanning microscope as defined in Claim 15, wherein the rotation is accomplished by the use of piezoelements.
- [c19] 19.The confocal scanning microscope as defined in Claim 12, wherein the relative position change between the spectrally dispersed light beam and the detection apparatus is accomplished by a relative motion means of the detection apparatus.
- [c20] 20.The confocal scanning microscope as defined in Claim 19, wherein the relative motion of the detection apparatus occurs along a straight line or along a curve.
- [c21] 21.The confocal scanning microscope as defined in Claim 12, wherein the relative position change between the spectrally dispersed light beam and the detection apparatus is accomplished by way of a combined angle/position change of at least two optical components.
- [c22] 22.The confocal scanning microscope as defined in Claim 12, wherein the means for spectral dispersion consists essentially of a prism, a reflection

grating, and a transmission grating.

- [c23] 23.The confocal scanning microscope as defined in Claim 12, wherein the relative position change between the spectrally dispersed light beam and the detection apparatus is synchronized with the scanning operation of the confocal scanning microscope.
- [c24] 24.The confocal scanning microscope as defined in Claim 23, wherein a specimen segment is scanned repeatedly with the confocal scanning microscope, at different spectral detection settings each time, until the entire spectral region to be detected has been detected, before a subsequent specimen segment is scanned.
- [c25] 25.The confocal scanning microscope as defined in Claim 24, wherein the specimen segment consists essentially of a point, a line, a straight line, an area or a three-dimensional region.
- [c26] 26.The confocal scanning microscope as defined in Claim 23, wherein synchronization also comprises selection of a wavelength of light to be coupled into the scanning microscope.
- [c27] 27.The confocal scanning microscope as defined in Claim 26, wherein selection of the wavelength to be coupled in is accomplished with an acoustooptical component, such as an acoustooptical tunable filter (AOTF) or acoustooptical beam splitter (AOBS).